

Physics

Additional requirements 27-29*
 (see notes 1 and 3)
 MATH 75, 76, 77, 81;
 CHEM 1A, 1B (25)
Plus one of the following
 IT 52 or CSCI 15 or
 CSCI 40 or ECE 70 (2-4)
General Education requirements..... 45**
Electives 0-1
Total units 120*

* The 120 unit total assumes students will select either IT 52, CSCI 15, or ECE 70 for this area.

** There are 51 units required for General Education. Of these 51 required units, 6 units will be satisfied by the following two courses in additional requirements: 3 units of CHEM 1A in G.E. Breadth B1 and 3 units of MATH 75 in G.E. Foundation B4.

Advising Notes

1. *CR/NC* grading is not permitted in the physics major. Additional requirements, however, may be taken *CR/NC* (see *Credit/No Credit Grading*).
2. Courses outside the Department of Physics may be substituted for physics upper-division electives with prior approval of the department chair.
3. Students should be sure to take sufficient upper-division units in their General Education courses and electives to satisfy the university requirement of 40 upper-division units. It is important to fulfill the upper-division writing skills requirement by exam or *W* class after completing 60 units for which a student may request 1 unit of credit.

Suggested Sequence of Courses for the B.S. in Physics

The list below is a suggested schedule of courses for the major for students planning to complete the suggested pregraduate study sequence in four years.

In addition to the specific courses listed below, General Education requirements and electives should be included to bring the average total of units to 15 per semester. A minimum total of 120 units must be completed for the Bachelor of Science degree. (See *Degree Requirements*.)

- 1st Year: PHYS 4A, 4AL; CHEM 1A, 1B; MATH 75, 76; Computer Programming
 2nd Year: PHYS 4B, 4BL, 4C; MATH 77, 81

- 3rd Year: PHYS 102, 104, 105A, 105B, 110, 150, 151, 170A
 4th Year: PHYS 107A, 107B, 115, 140, 162; plus upper-division electives

Physics Minor

	<i>Units</i>
PHYS 4A, 4AL, 4B, 4BL, 4C	11
PHYS 102	3
Other upper-division physics	6
Total units	20

Note: The Physics Minor also requires a 2.0 GPA and 6 upper-division units in residence.

Bachelor of Science in Biomedical Physics

The B.S. in Biomedical Physics is an interdisciplinary program developed with the assistance of the National Institute of Mental Health and the National Institute of Biomedical Imaging and Bioengineering to motivate students pursuing careers in applications of physics in medicine. The curriculum provides fundamental groundwork in physics, mathematics, and biology. For further details, please contact Dr. Amir Huda at 559.278.8427 or visit <http://medicalphysics.csufresno.edu>.

Bachelor of Arts in Natural Sciences

Physics Option

The B.A. in Natural Sciences serves as a waiver program for the Single Subject Teaching Credential in Science. This waiver program is currently under review by the California Commission on Teacher Credentialing and until program approval is secured, the appropriate CSET exams will be required to establish subject matter competency. Please contact Mr. Jaime Arvizu, College of Science and Mathematics counselor, for advising and more information at 278-5173.

The degree is also a suitable choice for students with a general interest in physics and interest in pursuing a career in law, medicine, dentistry, optometry, and other areas for which the breadth of scientific coverage of this degree is advantageous.

The B.A. in Natural Sciences with the Physics Emphasis is as follows:

Bachelor of Arts Degree Requirements

<i>Natural Sciences Major</i>	<i>Units</i>
Core requirements	36
<i>Biology</i>	<i>(12)</i>
BIOL 1A, 1B, 101	
<i>Chemistry</i>	<i>(10)</i>
CHEM 1A, 1B	
<i>Geology</i>	<i>(7)</i>
EES 1 and 168	
<i>Natural Science</i>	<i>(3)</i>
NSCI 106	
<i>Physical Science</i>	<i>(4)</i>
PSCI 21	

Physics Option 41

CHEM 128A	(3)
PSCI 168	(3)
MATH 75, 76, 77, 81	(15)
PHYS 4A, 4AL, 4B, 4BL, 4C.....	(11)
PHYS 102, 105A, 107A	(9)

General Education

requirements^{1,2} 51

Electives and remaining

degree requirements 4

Total units 120

Advising Notes for

the Natural Sciences Major

1. Of the 51 General Education units, 12 units may be satisfied as follows: CHEM 1A (3 units), BIOL 1A (3 units), EES 168 (3 units), and MATH 75 (3 units). Consult your major adviser for details.
2. Students should be sure to take sufficient upper-division units in their General Education courses and electives to satisfy the graduation requirements of 40 upper-division units and upper-division writing skills.
3. No physical science Integration B course may be used to satisfy the General Education requirements for majors in physical science.

Waiver Program for the Single Subject Credential in the Sciences

Students interested in satisfying the waiver program in the Natural Sciences should consult an appropriate adviser early in their academic program.